APPENDIX C

WHAT ARE INDICATOR BACTERIA?

Indicator bacteria are surrogates used to measure the potential presence of fecal material and associated fecal pathogens. Indicator bacteria such as fecal coliform and enterococcus are part of the intestinal flora of warm-blooded animals.

Indicator organisms have been long used to protect bathers from illnesses that may be contracted from recreational activities in surface waters contaminated by fecal pollution. These organisms often do not cause illness directly, but have demonstrated characteristics that make them good indicators of harmful pathogens in waterbodies. A direct link has been established between human illness and recreating near the outfalls of urban storm drains (San Diego Water Board, 2001, and 2002a).

Microorganisms are ubiquitous in all terrestrial and aquatic ecosystems. Of the vast number of species, only a small subset are human pathogens, capable of causing varying degrees of illness in humans. The source of these harmful organisms is usually the feces or other wastes of humans and various warm-blooded animals. The pathogens most commonly identified and associated with waterborne diseases can be grouped into the three general categories: bacteria, viruses and protozoa.

The detection and enumeration of all pathogens of concern is impractical in most circumstances due to the potential for many different pathogens to reside in a single waterbody, lack of readily available and affordable methods of detection, and the variation in pathogen concentrations. The use of indicators provides a means to ascertain the likelihood that human pathogens may be present in recreational waters.

More information on indicator bacteria and USEPA guidance for implementation of water quality criteria can be found at:

http://www.epa.gov/waterscience/criteria/bacteria/